THE RAMTOP

WINTER ISSUE 1989

TS-2068

TS-2068

Santa's got his ZX printer working again and he is checking his list of the SINCLAIR users to see who is still on his appointed route! (Are you CURRENT?!)

Winter Editorial

Hello to all! Here we are comming up to the end of another year and another holiday season! Where has this year gone to? It just seems like we had summer a few short weeks ago. I hope you are all well and using your computers! I am still plugging along. As you will recall from our last editorial, I was looking for an IBM clone. Well, I got one but had to send it back due to a problem with the bios chips and the hard drive. I should have it back in a week. Let me tell you, if you are thinking of purchasing a clone, you better be prepared to do a LOT of reading. The clones with out a doubt are superior when it comes to hardware but their software can be a real pain in the back side! I think a lot of the problem is due to (doesn't this sound familiar) so many ways to configure a PC. What it boils down to is that you must install your programs before you use them. This can be easy or hard depending on what type of drives you have and how much memory you have ECT. Anyway, it will be a time before I get the hang of mine. I am hoping to get help from others in our group that have already jumped into the IBM frying pan. (IBM UBM WE ALL BM FOR IBM!)

How are your SINCLAIRS doing? Mine is still going strong. I hope I will still be receiving quality articles for the RAMTOP as we have in the past. Please remember, our group is only as good as what YOU put into it! We all tend to get lax as time goes on. I hope you will consider sending articles about other computer systems as well. Your Sinclair may be a bit jealous but then just maybe it will work a bit better for you! One good project that is both useful and fun is setting up two normally incompatible systems to "talk" to each other. The best way to do this is with the serial port. Most computers have an RS-232 serial port. The QL and the Z-88 both have serial ports built in. The 2068 can have a serial port added in several ways and the 1000/1500 can also be set up with a serial port also. There are many articles about this. In the comming year we will be looking into items such as this.

If you can think of ways to interface a Sinclair computer to another type of computer, write a short article about it and send it to me! You may also upload it to TIMELINES BBS. Bob Parish is still running his BBS. You may call any night from 10pm to 6am EST. He has up/down loads and much more.

You will find we have quite a lot in this issue. You will find programs by Tom Jennins and Henry Kinnerle. If you have any questions about these programs, give them a call.
Tom Jennins: 216-942-4209, Henry Kinnerles Bowling program is designed to be burned onto EPROM since the program is so long and requires a LOT of RAM for variables. It will keep track of team and individual averages and more. His number is: 216-276-5787. I hope you will take the time to check these programs out!

That's it for this time! Hope you all have a real nice holiday season! Take Care to all of you! *James G. DuPuy*

S.M.U.G. SELLING DIGITIZER FOR THE 2068

If you ever wanted to put video pictures on your 2068, it can now be done. The **S.M.U.G.** group are now taking orders for digitizer boards in 2 forms. For one fully assembled, tested and shipped right to your doorstep, the cost is only **$49.95 plus $3. S/H**. If you want the bare board and are electronically inclined, the cost is only **$19.95 plus $3. S/H.**

The price of the boards includes the hardware and software, is on cassette. The bare board also includes the schematic and parts list. Both boards have an leading edge connector and is ready for a mother board. If you want a feed through connector, like the **AERCO**, there is a **$5.00** extra charge for this type connector. The turnaround time for these boards will be about **6-8 weeks**. Please remit the amount with each order. You can send to:

Sinclair Milwaukee Users Group
P.O. Box 101
Butler, WI 53007

If you want more info., write them on this club project.

SINCLAIR NOTES.....BY THOMAS SIMON

Well another year has gone by and most of us are still alive with Uncle Clive. Our Sinclair Community in the US has grown smaller as the prices of PCs has decreased. The idea that our Sinclair Club could support our Sinclair habit and generic computer interests as some of our members upgrade has not been as sucessful as I had hoped. Part of the fault is mine since I was not here for part of the year and the club cannot run itself, and perhaps the user base has grown too small already. We need a more active membership as our group grows smaller. That means articles from you folks who live out of town, for we need contributions to the newsletter from everyone. From the local membership we need ideas and help for the meetings, projects and the newletter. If we are going to survive at all we have to contribute what each of us can to the club.

In the UK the Spectrum and the QL has suffered a decline too but by virtue of the large user base and the emphasis on games the Spectrum is still surviving. The QL doesn't have quite the support that the Spectrum does but the quality of users seems to be much higher. Groups like Quanta enhance the lives of our machines. Again a subscription to Quanta costs #17 ,is payable by plastic (Mcharge or Visa) and is available by writing to Philip Borman, 15 Grosvenor Crescent Grimsby, South Humberside DN32 0QJ, England.

ABC-Electronic, Hugelstr. 10-12, 4800 Bielefeld 1, West Germany has come up with an inexpensive hard disk interface for the QL. It works with the DST controller and the Sandy superQBoard. A different version is sold for those who have the TRUMP Card. Hard disks that use the ST506 interface are supported. This interface apparently has a slot that uses a PC style interface which the user must supply the Driver drives an OMTI 5520 or the SEAGATE ST11 hardisk controller. Subdirectories, auto-boots as well as two hard disks are supported. A utilities package is also supplied. The cost is DM 398. Their telephone # is 0521-890381 should you want to call.

Miracle Systems also has a hard disk interface out which has a disk drive and interface enclosed in one box. Probably the best place to inquire about this would be Sharp's, Box 326, Mechanicsvilles, VA 32111. Rebel Electronics sells a disk controller that plugs into the QL's expansion port and supports ST506/ ST412 Drive interface and has an 8K sector buffer. Price is #195 for the interface only. Write to Rebel Electronics Ltd., 12 York Place, Leeds LS1 2DS, England or call them at 0757 86620.

Those who have used the PC emulator on the QL were impressed by how slow the program ran. Apparently the creators of this software package Digital Precision felt that a change was needed too so a faster PC emulator is now available called the "PC Conquerer". It will run almost 100% faster than the Solution and for those who purchased that program a special upgrade price will be available.

A new ROM for the QL is now available which fixes many of the bugs and problems with the QL and THOR ROMS. It features faster RAM testing for Trump Card users, faster graphics, more use made of integer math where appropiate and a number of new commands and improved features. The cost is #30, #25 if you belong to Quanta or QL SUB + a disk or microdrive with a copy of the Original QL Rom. The reason for this is that Minerva uses some of the Original QL ROM code and they must do this to avoid copywrite infringements. Also the media is used to give you some 15 pages of documentation. Write to QView 29 Carnaby Close, Godmanchester, Cambridgeshire PE18 9EE, England. Telephone # 0480 412884.

In a slightly different vein comes the "AQUMULATOR" from Germany. This is a QL hardware emulation package for the ATARI ST machines. It consists of a plug in board and a requires that six wires be soldered. It improves the perfomance of many QL programs running on a 68000 instead of the 68008. Some games using graphics are not supported. For further information about the QL emulator write to Jochen Merz Software, Im stillen Winkel 12, 4100 Duisburg 11, West Germany. He also has a 24 Pin printer utilites program for the QL that might be of interest to someone out there.

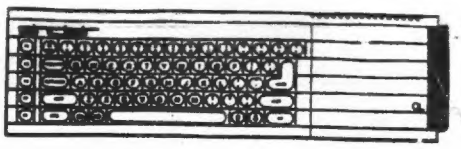
Now for some information for Spectrum and 2068 users. Zebra and NMI sold out their inventory to PMG who is now the largest dealer in North America. Curry has also moved to clones. The Sinclair Echo which you may have heard about, started out with about twenty or thirty messages a day has slowed down and there may be some problems with messages getting lost on the FIDO. The above information comes from Phoenix Pete. Thanks Pete. My local Fido run by one of the local hospitals is operating but not by much. Apparently some "by the book" type doctor downloaded a file from that BBS which should not have been available to him since it had not been checked. Without going into what it was....the result was that only medical files were left on the board and what had been an asset to the community was essentially negated. If any one would like to get in touch with me I am on CIS and they can leave a message either through E-Mail or in the Club section of CIS to ID 73177,333.

Neil Elias spent a couple weeks in the UK this fall and he reported on the vast amount of Spectrum software still available. Also he noted in the works is the SAM COUPE which is a Z-80 machine which will run CPM, has a built in disk drive, extra RAM, networking AND SPECTRUM emulation. Write to MILES GORDON TECHNOLOGY, Lakeside, Phoenix Way, Swansea Enterprise Park, Swansea, SA7 9EH, England, Telephone # 0792 791100.

Max finally was able to get a response from Tim Woods at Time Designs but it is still uncertain if any of us will recieve our back issues. At that Eastside meeting there were at least nine people who were owed back issues of TDM. So if you have a modem and want to leave a message to Time Designs, they have a BBS running at 300 baud only at 503-824-2658 and you should be able to reach Tim Woods there.

Well I hope that all of our Sinclair and Timex people will have a Happy and Safe Holiday Season and that we'll still be around in 1990 at this time of year. Good Luck to all of you and let's see some new programs in the comming year.

Please note that we are NOT responsible for damage to your computer!



QL tips and bug fixes from a recent QL WORLD.

Sinclair/QL World November 1989

Remedies

Two very knowledgable QL enthusiasts to whom I am indebted have looked at the problem of random crashes and have produced the following remedies. Let me stress that the work involved should be attempted only by those with sufficient knowledge and soldering skills.

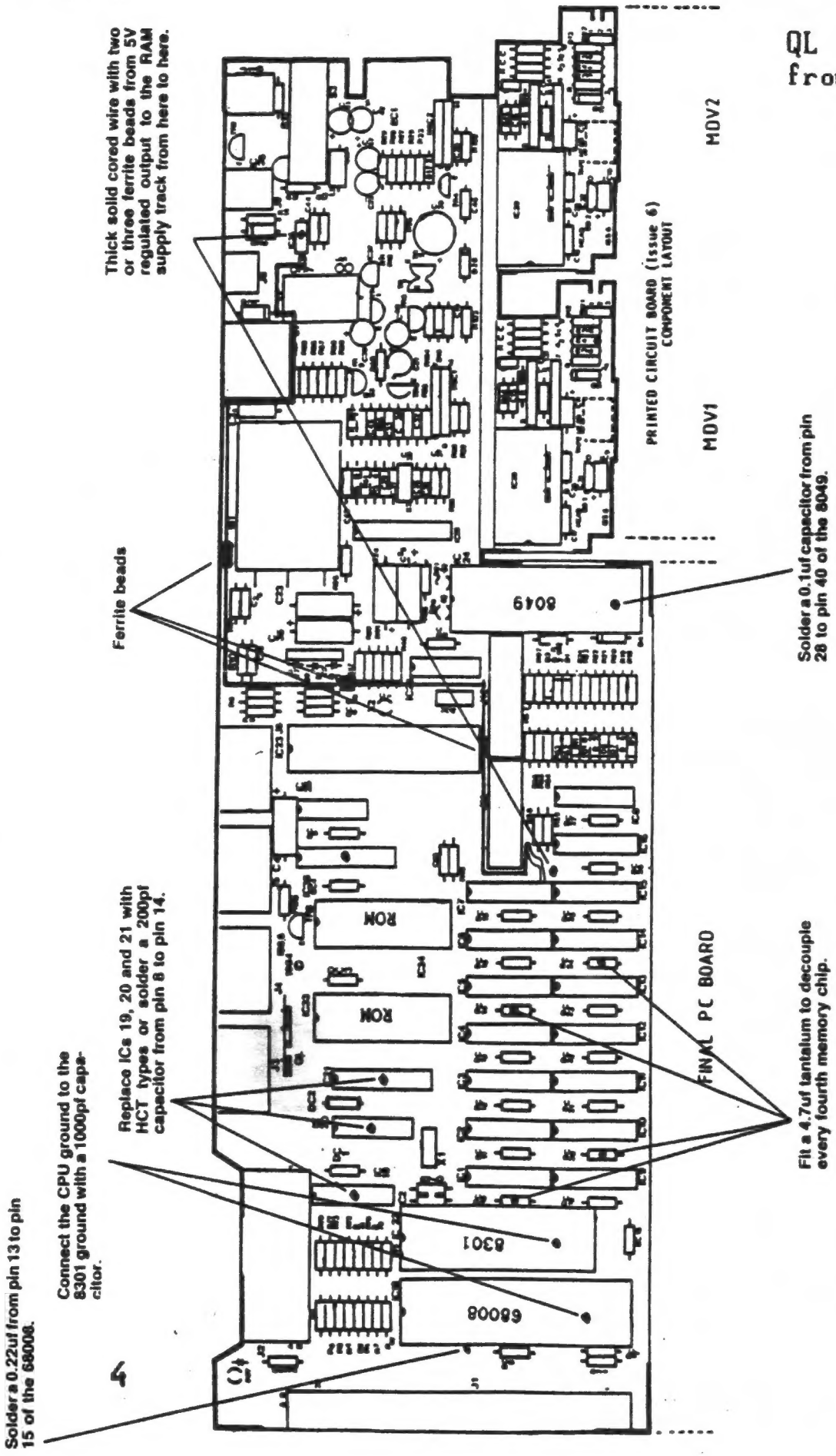
1. Replace the 7805 with the 2amp 78S05.
2. Check that the voltage at the 68008 is 4.9V.
3. Put a 0.1mfd capacitor between the centre and right-hand pin of the 78S05.

4. Replace the long jumper wire from the regulator to the thick track just below the 9-way membrane connector with solid cored insulated wire with two or three ferrite beads on it.
5. Connect a 0.01mfd capacitor between pin 6 and pin 15 of the 8301, then a 0.001mfd from pin 6 of the 8301 to pin 15 and pin 35 of the 68008.
6. Solder a 0.01mfd capacitor in parallel with a 10mfd 10V tantalum capacitor and connect to pin 20 and pin 40 with + to pin 40 of the 8309 co-processor.

Options

A. Change IC19, IC20, IC21 and IC27 for their HCT equivalents.
B. Connect a 68pf capacitor between each data line and ground.
C. Replace the 0.01mfd capacitors between each RAM chip with 0.33mfd if the RAM chips are the slow 200ns types.
D. Fit a 4.7mfd tantalum capacitor across the supply pins of every fourth RAM chip in the QL.

With a small outlay and some careful work you will have a QL which is completely reliable and crash-proof.



MAX'S FACTS

HAVE YOU EVER HAD AN ODD COMPUTER EXPERIENCE? TELL US ABOUT IT! HERE IS ONE TO START.

Years back, when so many of us got started on the T/S 1000, my name was listed in the P.D. as a contact person for this machine. I did get quite a few calls, some with a peculiar twist, but I think this is my best.

A retired doctor called to say that he took advantage of a Pic N Pay promotion: with $ 100 of checkout tapes he could buy the T/S 1000 with 16 K Ram for $ 50. He had it at home and could not get the cursor on his TV. I went over the hook-up procedure with him over the phone and he said he would try again.

He called back soon, still no cursor. I invited him over to my house and showed him my set-up, in working condition. He went home and tried again, still no cursor. We reviewed the procedure again over the phone, even making sure his power supply was plugged in, still nothing.

The only thing left to do was for me to go to his house, bringing my system to replace his components one at a time to find what was wrong. His house was impressive, located in Shaker Heights with an outstanding garden in front. He was set up in a room next to the kitchen, so he introduced me to his butler and his cook working there. Then we went to work and found that the power supply was defective.

I went home to get him Sinclair's hot line number (remember that?) and found that he had located a new supply at the supermarket main office. He got his cursor at last - and never did anything with it! I checked with him a few times, and he was going to study the manual, then he was going to take a college course on computers, and the last time he was going to buy an IBM, so that he could balance his checkbook!

Max Schoenfeld

A moldy oldy for the Spectrum. Faster BASIC from ZX COMPUTING 1986

Malcolm Sargent offers a few ideas on how to speed up your programs without resorting to machine code.

Basic on the Spectrum is very slow and to write faster programs you must revert to machine code or a compiler. However with the following routines you should be able to speed up your programs without getting bogged down in m/c. All routines should work on all versions of the Spectrum.

Interrupts

The Spectrum interrupts every two milli-seconds to do a number of semi-essential operations which include error checking and checking if the break key is pressed. We can disable the interrupts by three machine code instructions 'XOR A', 'OUT (255),A' and 'DI' (followed by a 'RET' to return to Basic). This can be used in Basic by the following line at the beginning of the program:

```
10 CLEAR 64999:POKE 65000,175:POKE 65001,211:POKE 65002,255:POKE 65003,243:POKE 65004,201:RAND USR 65000
```

After interrupts have been disabled Basic will run a little faster and any error will cause the machine to crash (pull the plug). At eh end of the program there must be a line to enable the interrupts or the computer crashes and to stop this use the line below as the last one executed in your program.

```
9999 POKE 65000,251:POKE 65001,210:RAND USR 65000
```

Due to the way Basic is written, as the program increase in size the slower it runs. However if we use less memory the program will run faster and you can use the following ideas to keep the program short.

1. Have all subroutines at the beginning of your program as the Basic has less lines to look through to find your line.
2. Initialise all variables at the end of your program and use VAL and CODE when defining variables as this saves memory.
3. Use multi-statement lines a they save a lot of memory and run faster. Do not use REM statements in these multi-statement lines.
4. Have very few, if any REM statements.
5. When running a program and Basic comes to a GOTO (line no.) Basic looks through every memory position until it comes to one the same or the nearest after it. Then it alters the system variable 'NXTLN' to the address of the line number and executes it. However to save the computer carrying out this very time consuming process you can poke the system variable to the address and do away with the GOTO statement. Use the following program to work out the line number's address and replace the GOTO with **POKE 23637,(LO BYTE):POKE 23638,(HI BYTE)**. When altering lines remember to refind the address of every line after the altered line.

```
9998 INPUT "LINE NUMBER→";LN: LET A=41472-(65535-USR 7962):LET B =(PEEK 23635*256)+PEEK 23635: FOR S=B TO (A+B+100):IF (PEEK S*256)+ PEEK (S+1)= LN AND PEEK (S-1)=13 OR (PEEK S*256) +PEEK (S+1)=LN AND PEEK (S-1)=128 THEN LET HI=INT (S/256):LET LO = S-(HI*256):PRINT "LINE NUMBER: ";LN;" ADDRESS→";S;"HI BYTE →";HI;"LO BYTE →";LO:STOP
9999 NEXT S:PRINT"NOT FOUND"
```

6. A fast way to get the value of a key being pressed is to PEEK the value out of the system variable 'LAST K' (23560). The statement to read the keyboard into a$ is **1000 LET A$=CHR$(PEEK 23560):POKE 23560,0.**
7. To test if you have found any new ways to make your programs run faster try this routine

```
10 POKE 23672,0:POKE 23673,0: POKE 23674,0 (then RUN the program).
99 PRINT "TIME PASTED IN 1/50 SECONDS IS"; PEEK 23672+256*PEEK 23673+65535*PEEK 23674
```

Here is **TRIG-11** by Tom Jennins.

This program calculates degrees and angles for triangles.

```
  22 REM 9-5-85 5412 bytes
  27 REM ■■■ TO BREAK BACK TO BA
SIC type 999 for the first entry
 of the six asked for.■■■
  30 REM **50 PAR valid entries
follow: to find side a, "A,b,b"
or"A,C,c" or "A,b,c"--side b, "A
,B,a" or "B,C,c" or "B,a,c"--sid
e c, "A,C,a" or "B,C,b" or "C,a,
b" ** Angle A, "B,C" or "B,a,b"
or "C,a,c" or "a,b,c"** Angle B,
 "A,C" or "A,a,b" or "C,b,c" or
"a,b,c"** Angle C, "A,B" or "A,a
,c" or "B,b,c" or "a,b,c"
  45 PRINT AT 10,4;"Enter   LIST
 1  to see the program and read
the REM statements. WRITE THIS D
OWN! Enter   999  as the first i
tem of the six called for to BRE
AK into BASIC.      Press CONT an
d you're on your own.
                                Have f
un, Tom Jennens"
  46 STOP
  50 ON ERR GO TO 1000
  55 GO TO 9000
  70 INPUT A: PRINT AT 17,3;A: I
F A=999 THEN ON ERR RESET : STOP

  72 INPUT B: PRINT AT 18,13;B:
INPUT C: PRINT AT 17,23;C: INPUT
 D: PRINT AT 19,3;D: INPUT E: PR
INT AT 20,13;E: INPUT F: PRINT A
T 13,23;F
 100 IF A>0 THEN LET H=1
 105 IF A=0 THEN LET H=0
 110 IF B>0 THEN LET J=2
 115 IF B=0 THEN LET J=0
 120 IF C>0 THEN LET K=4
 125 IF C=0 THEN LET K=0
 130 IF D>0 THEN LET L=8
 135 IF D=0 THEN LET L=0
 140 IF E>0 THEN LET M=16
 145 IF E=0 THEN LET M=0
 150 IF F>0 THEN LET N=32
 155 IF F=0 THEN LET N=0
 170 LET T=H+J+K+L+M+N
 190 GO TO 205
 200 PRINT AT 21,1;"Press ANY KE
Y for next problem": PAUSE 0: GO
 TO 9000
 215 IF T=3 THEN PRINT AT 17,23;
180-(A+B): GO SUB 200: PAUSE 0:
GO TO 9000
 225 IF T=5 THEN PRINT AT 17,13;
180-(A+C): GO SUB 200: PAUSE 0:
GO TO 9000
 230 IF T=6 THEN PRINT AT 17,3;1
80-(B+C): GO SUB 200: PAUSE 0: G
O TO 9000
 235 IF T=7 THEN PRINT AT 9,0;"
 ■Length of  at least one side m
ust be included. Try again.■": G
O SUB 200: PAUSE 4e4: GO TO 9000
 255 IF T=11 THEN PRINT AT 20,13
;D*SIN (B/180*PI)/SIN (A/180*PI)
: GO SUB 200: PAUSE 0: GO TO 900
0
 265 IF T=13 THEN PRINT AT 19,23
;D*SIN (C/180*PI)/SIN (A/180*PI)
: GO SUB 200: PAUSE 0: GO TO 900
0
 295 IF T=19 THEN PRINT AT 19,3;
(E*SIN (A/180*PI))/SIN (B/180*PI
): GO SUB 200: PAUSE 0: GO TO 90
00
 310 IF T=22 THEN PRINT AT 19,23
;E*SIN (C/180*PI)/SIN (B/180*PI)
: GO SUB 200: PAUSE 0: GO TO 900
0
 325 IF T=25 THEN PRINT AT 18,13
;ASN (E*SIN (A/180*PI)/D)/PI*180
: GO SUB 200: PAUSE 0: GO TO 900
0
```

SEE SAMPLE OUTPUT ON PAGE 12.

```
 330 IF T=26 THEN PRINT AT 17,3;
ASN (D*SIN ((B-.000001)/180*PI)/
E)/PI*180: GO SUB 200: PAUSE 0:
GO TO 9000
 340 IF T=28 THEN PRINT AT 19,23
;SQR ((D↑2+E↑2)-(2*D*E*COS (C/18
0*PI))): GO SUB 200: PAUSE 0: GO
 TO 9000
 385 IF T=37 THEN PRINT AT 19,3;
F*SIN (A/180*PI)/SIN (C/180*PI):
 GO SUB 200: PAUSE 0: GO TO 9000
 390 IF T=38 THEN PRINT AT 20,13
;F*SIN (B/180*PI)/SIN (C/180*PI)
: GO SUB 200: PAUSE 0: GO TO 900
0
 405 IF T=41 THEN PRINT AT 17,23
;ASN (F*SIN (A/180*PI)/D)/PI*180
: GO SUB 200: PAUSE 0: GO TO 900
0
 410 IF T=42 THEN PRINT AT 20,13
;SQR ((D↑2+F↑2)-(2*D*F*COS (B/18
0*PI))): GO SUB 200: PAUSE 0: GO
 TO 9000
 420 IF T=44 THEN PRINT AT 17,3;
ASN (D*SIN (C/180*PI)/F)/PI*180:
 GO SUB 200: PAUSE 0: GO TO 9000
 445 IF T=49 THEN PRINT AT 19,3;
SQR ((E↑2+F↑2)-(2*E*F*COS (A/180
*PI))): GO SUB 200: PAUSE 0: GO
TO 9000
 450 IF T=50 THEN PRINT AT 17,23
;ASN (F*SIN (B/180*PI)/E)/PI*180
: GO SUB 200: PAUSE 0: GO TO 900
0
 460 IF T=52 THEN PRINT AT 18,13
;ASN (E*SIN (C/180*PI)/F)/PI*180
: GO SUB 200: PAUSE 0: GO TO 900
0
 480 IF T=56 THEN PRINT AT 17,3;
ACS (((E↑2+F↑2)-D↑2)/(2*E*F))/PI
*180: PRINT AT 18,13;ACS (((D↑2+
F↑2)-E↑2)/(2*D*F))/PI*180: PRINT
 AT 17,23;ACS (((D↑2+E↑2)-F↑2)/(
2*D*E))/PI*180: GO SUB 200: PAUS
E 0: GO TO 9000
1000 PRINT AT 9,0;"■alues will n
ot make a triangl■.  ■ress any k
ey to restar■": PAUSE 0: GO TO 9
000
8999 REM ■■■
9000 CLEAR
9001 PRINT AT 0,3;"RIGHT";AT 1,2
;"TRIANGLE"
9010 PLOT 18,111: DRAW 80,0: PLO
T 18,111: DRAW 0,40: DRAW 80,-40
9020 PRINT AT 4,3;"B";AT 7,3;"A"
;AT 7,9;"C"
9030 PRINT AT 5,1;"c";AT 4,6;"a"
;AT 8,5;"b"
9040 PRINT AT 0,17;"OBLIQUE";AT
1,17;"TRIANGLE"
9050 PLOT 136,111: DRAW 83,0: PL
OT 136,111: DRAW 27,40: PLOT 163
,152: DRAW 56,-41
9060 PRINT AT 4,20;"B";AT 7,18;"
A";AT 7,25;"C"
9070 PRINT AT 5,17;"c";AT 5,25;"
a";AT 8,21;"b"
9100 PRINT AT 12,2;"ENTER KNOWN
VALUES (A,B,C,a,b & c; use 0 if
unknown) FOR ANGLES AND SIDES.(D
ecimal values for both.)"
9110 PRINT AT 17,1;"A=          ";
AT 18,11;"B=          ";AT 17,21;"
C=          ";AT 19,1;"a=
;AT 20,11;"b=          ";AT 19,21;
"c=
9120 PRINT AT 0,27;"■rong";AT 1,
27;"entry";AT 2,27;"press";AT 3,
28;"""w"""
9130 GO TO 70
9235 IF T=7 THEN PRINT AT 9,0;"■
Length of  at least one side mus
t be included. Try again.■": GO
SUB 200: PAUSE 4e4: GO TO 9000
```

Here is the line listing for Henry Kimmerle's BOWLING program.

```
  1 PRINT AT VAL "5",VAL "0";"Load BOWLING variables from tape      PRESS ANY
KEY"
  2 PAUSE VAL "0": LOAD "BOWLING"
 10 BORDER VAL "1": PAPER VAL "1": INK VAL "7": CLS
 19 PRINT AT VAL "0",VAL "7";" OOO   U   U  RRRR "
 20 PRINT AT VAL "1",VAL "7";"O   O  U   U  R   R"
 21 PRINT AT VAL "2",VAL "7";"O   O  U   U  RRRR"
 22 PRINT AT VAL "3",VAL "7";"O   O  U   U  R R"
 23 PRINT AT VAL "4",VAL "7";" OOO    UUU   R  R"
 24 PRINT AT VAL "6",VAL "6";" BOWLING LEAGUE "
 25 PRINT AT VAL "8",VAL "8";"* * M E N U * *"
 26 PRINT AT VAL "10",VAL "5";"1.  CREATE NEW LEAGUE "
 27 PRINT AT VAL "12",VAL "5";"2.  ADD WEEKLY SCORES "
 28 PRINT AT VAL "14",VAL "5";"3.  CALCULATE & STORE "
 29 PRINT AT VAL "16",VAL "5";"4.  LPRINT MENU       "
 30 PRINT AT VAL "18",VAL "5";"5.  INFORMATION WINDOW"
 31 PRINT AT VAL "20",VAL "5";"6.  SAVE RECORDS      "
 33 PRINT AT VAL "21",VAL "5";"PRESS NUMBER OF CHOICE"
 35 IF INKEY$="" THEN GO TO VAL "35"
 36 IF INKEY$="1" THEN GO TO VAL "2100"
 37 IF INKEY$="2" THEN GO TO VAL "2200"
 38 IF INKEY$="3" THEN GO TO VAL "2300"
 39 IF INKEY$="4" THEN GO TO VAL "2400"
 40 IF INKEY$="5" THEN GO TO VAL "2500"
 41 IF INKEY$="6" THEN GO TO VAL "2600"
 42 GO TO VAL "35"
 45 STOP
100 REM ENTER LEAGUE NAMES
101 CLS : PRINT AT VAL "5",VAL "2";"THIS WILL CLEAR MEMORY OF ALL FILE RECORDS.
"//"IS THAT WHAT YOU DESIRE?       ANS.(Y/N)"
102 IF INKEY$="Y" OR INKEY$="y" THEN GO TO VAL "1000"
103 IF INKEY$="N" OR INKEY$="n" THEN GO TO VAL "10"
104 IF INKEY$<>"Y" OR INKEY$<>"N" THEN GO TO VAL "102"
105 STOP
110 FOR y=VAL "1" TO VAL "12": INPUT "Team Name?  ";x$
115 LET T$(y)=x$
120 FOR x=VAL "1" TO VAL "7"
125 INPUT "Bowler's Name? Enter STOP if no name  ";x$
130 IF x$=" STOP " THEN NEXT y
135 LET N$(y,x)=x$
140 NEXT x: NEXT y
150 GO TO VAL "10"
200 REM ENTER SCORES & CHECK    ARITHMETIC
201 CLS : LET W=W+VAL "1": FOR y=VAL "1" TO VAL "12"
202 PRINT T$(y);"  ";W;" WEEK(S)"
203 FOR x=VAL "1" TO VAL "7": IF N$(y,x)="            " THEN NEXT x: IF x=VAL "
8" THEN GO TO VAL "215"
204 PRINT TAB VAL "2";N$(y,x);"  ";
205 LET T=VAL "0": LET S=VAL "0": FOR z=VAL "1" TO VAL "3": INPUT "Score? If ma
n absent, PRESS N.  Input spaces if no game.";x$
206 IF x$="n" OR x$="N" THEN LET P=PEEK VAL "23689": PRINT AT VAL "24"-P,VAL "3
";"                  ": PRINT AT VAL "24"-P,VAL "0": NEXT x
207 IF x$="    " THEN PRINT "     ";: NEXT z
208 IF y=VAL "13" OR x=VAL "8" THEN GO TO VAL "215"
209 LET S$(y,x,W,z)=x$
210 IF G$(y,x)="    " THEN LET G$(y,x)="000"
211 PRINT x$;" ";: LET T=T+VAL x$: IF VAL x$>VAL G$(y,x) THEN LET G$(y,x)=x$
212 IF F$(y,x)="    " THEN LET F$(y,x)="000"
213 NEXT z: PRINT " ";T: IF T>VAL F$(y,x) THEN LET F$(y,x)=STR$ T
214 LET S=S+T: LET T=VAL "0": NEXT x
215 LET P=PEEK VAL "23689": OVER VAL "1": PRINT AT VAL "24"-(P+VAL "1"),VAL "16
";"_____": OVER VAL "0"
220 PRINT ;: LET G=VAL "0": LET S=VAL "0"
225 FOR z=VAL "1" TO VAL "3": LET M=VAL "0"
230 FOR x=VAL "1" TO VAL "7": IF S$(y,x,W,z)<>"    " THEN LET G=G+VAL S$(y,x,W,z
): LET M=M+VAL "1": NEXT x: IF x=VAL "8" THEN GO TO VAL "240"
235 IF S$(y,x,W,z)="    " THEN NEXT x
240 IF M<VAL "5" THEN LET G=G+((VAL "5"-M)*VAL "140")
245 INPUT "Does this team get a handycap? Enter pins/G8";x$
246 LET H$(y,W,z)=x$
247 IF I$(y)="    " THEN LET I$(y)="0000"
248 LET G=G+VAL x$: IF G>VAL I$(y) THEN LET I$(y)=STR$ G
250 PRINT G;" ";: LET S=S+G: LET G=VAL "0": LET M=VAL "0": NEXT z: PRINT S: PRI
NT
259 IF K$(y)="      " THEN LET K$(y)="00000"
260 LET v=VAL K$(y): LET v=v+S: LET K$(y)=STR$ v
264 IF J$(y)="    " THEN LET J$(y)="0000"
265 IF STR$ S>J$(y) THEN LET J$(y)=STR$ S
266 LET x$=P$(y): LET p1=VAL x$( TO 3): LET p2=VAL x$(4 TO )
267 LET x$=P$(y): LET p1=VAL x$( TO 3): LET p2=VAL x$(4 TO )
268 INPUT "Enter points won";pw: LET p1=p1+pw: LET x$( TO 3)=STR$ p1
269 INPUT "Enter points lost";pl: LET p2=p2+pl: LET x$(4 TO )=STR$ p2
270 LET P$(y)=x$
272 NEXT y
275 GO TO VAL "10"
600 REM AVERAGE CALCULATOR
601 CLS : LET T=VAL "0": LET N=VAL "0": FOR y=VAL "1" TO VAL "12"
602 FOR x=VAL "1" TO VAL "7": IF N$(y,x)="            " THEN NEXT y
603 IF y=VAL "13" THEN GO TO VAL "615"
604 FOR z=VAL "1" TO VAL "W": FOR q=VAL "1" TO VAL "3": IF S$(y,x,z,q)<>"    " T
HEN LET T=T+VAL S$(y,x,z,q): LET N=N+VAL "1"
605 IF z=W+VAL "1" THEN GO TO VAL "610"
606 IF S$(y,x,z,q)="    " THEN NEXT q: NEXT z
```

SEE SAMPLE OUTPUT ON PAGE 12.

Please note that this program will need to be burned on EPROM to run. This is due to the large program plus need for a large variable area. Call Henry for details (216-236-5787)

```
 607 NEXT q: NEXT z
 609 IF T=VAL "0" AND N=VAL "0" THEN GO TO VAL "614"
 610 LET A=(T/N)
 611 LET A$(y,x)=STR$ A: LET C$(y,x)=STR$ N: LET D$(y,x)=STR$ T
 612 IF N<VAL "0" AND L$(y,x)="   " THEN GO TO VAL "614"
 613 IF N<VAL "0" THEN LET A$(y,x)=L$(y,x)
 614 LET T=VAL "0": LET N=VAL "0"
 615 NEXT x: NEXT y
 650 REM HIGH AVERAGE
 651 LET Hi=VAL "0": FOR y=VAL "1" TO VAL "12": FOR x=VAL "1" TO VAL "7": LET B$
(y,x)=STR$ VAL "84"
 652 NEXT x: NEXT y
 653 FOR z=VAL "1" TO VAL "84"
 654 IF z=VAL "85" THEN GO TO VAL "10"
 656 LET High=VAL "0": FOR y=VAL "1" TO VAL "12": FOR x=VAL "1" TO VAL "7": IF N
$(y,x)="                " THEN NEXT x: NEXT y
 657 IF C$(y,x)="   " THEN GO TO VAL "663"
 658 IF VAL C$(y,x)<VAL "9" THEN GO TO VAL "663"
 659 IF x>VAL "7" THEN GO TO VAL "666"
 660 IF VAL B$(y,x)<=Hi THEN GO TO VAL "663"
 661 IF A$(y,x)<>"       " THEN LET A=VAL A$(y,x)
 662 IF A>High THEN LET High=A: LET Hy=y: LET Hx=x
 663 NEXT x
 665 IF y=VAL "12" AND High<>VAL "0" THEN GO TO VAL "668"
 666 NEXT y
 667 IF y=VAL "13" AND High=VAL "0" THEN GO TO VAL "675"
 668 LET Hi=Hi+VAL "1": LET B$(Hy,Hx)=STR$ Hi: NEXT z
 675 IF z=VAL "85" THEN GO TO VAL "10"
 676 LET High=VAL "0": FOR y=VAL "1" TO VAL "12": FOR x=VAL "1" TO VAL "7": IF N
$(y,x)="                " THEN NEXT x: NEXT y
 677 IF C$(y,x)="   " THEN GO TO VAL "683"
 678 IF VAL C$(y,x)>=VAL "9" THEN GO TO VAL "683"
 679 IF x>VAL "7" THEN GO TO VAL "686"
 680 IF VAL B$(y,x)<=Hi THEN GO TO VAL "683"
 681 IF A$(y,x)<>"       " THEN LET A=VAL A$(y,x)
 682 IF A>High THEN LET High=A: LET Hy=y: LET Hx=x
 683 NEXT x
 685 IF y=VAL "12" AND High<>VAL "0" THEN GO TO VAL "686"
 686 NEXT y
 687 IF y=VAL "13" AND High=VAL "0" THEN GO TO VAL "10"
 688 LET Hi=Hi+VAL "1": LET B$(Hy,Hx)=STR$ Hi: LET z=z+VAL "1": GO TO VAL "675"
 689 GO TO VAL "10"
 700 REM DISPLAY HI-AVG POSITION
 710 CLS : FOR y=VAL "1" TO VAL "12": PRINT "      ";: FOR x=VAL "1" TO VAL "7"
 720 PRINT B$(y,x);" ";: NEXT x: PRINT
 730 NEXT y
 740 PAUSE 0: GO TO VAL "10"
 800 REM ENTER LAST YEARS AVG
 805 CLS : FOR y=VAL "1" TO VAL "12": PRINT T$(y)
 810 FOR x=VAL "1" TO VAL "7": IF N$(y,x)="              " THEN NEXT y
 812 IF y=VAL "13" THEN GO TO VAL "10"
 815 PRINT N$(y,x);"    ";
 820 INPUT "Last years AVG ";x$
 825 PRINT x$;" AVG": LET L$(y,x)=x$
 830 NEXT x: NEXT y
 840 GO TO VAL "10"
 900 REM LPRINT STANDINGS
 910 LPRINT TAB VAL "31";" OOO   U   U  RRRR "
 911 LPRINT TAB VAL "31";"O   O  U   U  R   R"
 912 LPRINT TAB VAL "31";"O   O  U   U  R   R"
 913 LPRINT TAB VAL "31";"O   O  U   U  RRRR"
 914 LPRINT TAB VAL "31";"O   O  U   U  R  R"
 915 LPRINT TAB VAL "31";" OOO    UUU   R   R": LPRINT
 916 LPRINT TAB VAL "33";"BOWLING LEAGUE": LPRINT
 917 LPRINT TAB VAL "34";q$: LPRINT : LPRINT
 918 LPRINT TAB VAL "22";"Team";TAB VAL "36";"W";TAB VAL "42";"L";TAB VAL "46";"
TPns";TAB VAL "53";"HGs";TAB VAL "59";"HSr": LPRINT
 920 LET H=VAL "200"
 921 LET i=VAL "0": LET j=VAL "0": FOR z=VAL "1" TO VAL "12"
 922 LET u=VAL "0": FOR y=VAL "1" TO VAL "12": LET w$=P$(y)
 924 IF VAL w$( TO 3)>h THEN GO TO VAL "930"
 925 IF VAL w$( TO 3)=h THEN LET h=h+VAL "1": GO TO VAL "930"
 926 IF y=i OR y=j THEN NEXT y
 927 IF VAL w$( TO 3)>u AND u<h THEN LET u=VAL w$( TO 3): LET i=VAL w$(4 TO ): L
ET t=y
 929 IF z=VAL "12" AND y=VAL "12" THEN GO TO VAL "933"
 930 NEXT y
 932 IF z<VAL "10" THEN LPRINT TAB VAL "10";z;" ";T$(t);TAB VAL "37";u;TAB VAL "
41";i;TAB VAL "46";K$(t);TAB VAL "53";I$(t);TAB VAL "59";J$(t): GO TO VAL "935"
 933 IF z>=VAL "10" THEN LPRINT TAB VAL "17";z;" ";T$(t);TAB VAL "37";u;TAB VAL
"41";i;TAB VAL "46";K$(t);TAB VAL "53";I$(t);TAB VAL "59";J$(t)
 935 LET h=u: LET j=i: LET i=t: LET w$="      "
 940 NEXT z
 950 RETURN
 999 STOP
1000 DIM S$(VAL "12",VAL "7",VAL "36",VAL "3",VAL "3"): DIM T$(VAL "12",VAL "15"
): DIM N$(VAL "12",VAL "7",VAL "12"): DIM A$(VAL "12",VAL "7",VAL "6"): DIM B$(V
AL "12",VAL "7",VAL "2"): DIM C$(VAL "12",VAL "7",VAL "3"): DIM D$(VAL "12",VAL
"7",VAL "5"): D
IM F$(VAL "12",VAL "7",VAL "3"): DIM G$(VAL "12",VAL "7",VAL "3"): DIM H$(VAL "1
2",VAL "36",VAL "3",VAL "3"): DIM I$(VAL "12",VAL "4"): DIM J$(VAL "12",VAL "4"
): DIM K$(VAL "12",VAL "5"): DIM L$(VAL "12",VAL "7",VAL "3"): DIM P$(VAL "12",VA
L "6"): LET N=V
AL "0"
1001 GO TO VAL "110"
1005 STOP
1750 REM SUB TO FIND & LPRINT                    HIGH THREE
```

```
1751 CLS : LPRINT TAB 3;"Hi Team Game";TAB 22;"Hi Team Series";TAB 43;"Hi-Ind. Gam
e";TAB 64;"Hi-Ind. Series"
1755 GO SUB 1810: GO SUB 1860: GO SUB 1900: GO SUB 1950
1760 LPRINT TAB 1;T$(a, TO 10);TAB 13;h;TAB 21;T$(r, TO 10);TAB 33;p;TAB 40;N$(y
1,x1);TAB 54;d;TAB 61;N$(y4,x4);TAB 75;k
1765 GO SUB 1830: GO SUB 1870: GO SUB 1910: GO SUB 1960
1770 LPRINT TAB 1;T$(b, TO 10);TAB 13;i;TAB 21;T$(t, TO 10);TAB 33;q;TAB 40;N$(y
2,x2);TAB 54;e;TAB 61;N$(y5,x5);TAB 75;m
1775 GO SUB 1840: GO SUB 1880: GO SUB 1920: GO SUB 1970
1780 LPRINT TAB 1;T$(c, TO 10);TAB 13;j;TAB 21;T$(n, TO 10);TAB 33;v;TAB 40;N$(y
3,x3);TAB 54;f;TAB 61;N$(y6,x6);TAB 75;o
1785 GO SUB 1850: GO SUB 1890: GO SUB 1930: GO SUB 1980
1790 IF COPY THEN PRINT "Make 2040 Screen Copy now        PRESS ANY KEY": PAUSE 0
: COPY : LET /p=0: POKE VAL "23324",VAL "10"
1795 RETURN
1800 REM TEAM & IND. HI-3 SUB
1810 LET COPY=0: LET a=0: LET h=0: LET G=0: FOR y=1 TO 12
1820 LET G=VAL I$(y): IF G>h THEN LET h=G: LET a=y
1825 NEXT y
1826 RETURN
1830 LET G=0: LET b=0: LET i=0: FOR y=1 TO 12: IF y=a THEN NEXT y
1831 IF VAL I$(y)=h THEN BEEP .5,1: PRINT T$(y),I$(y): LET COPY=1: NEXT y
1832 IF VAL I$(y)<h THEN LET G=VAL I$(y)
1833 IF G>i THEN LET i=G: LET b=y
1835 NEXT y
1836 RETURN
1840 LET G=0: LET c=0: LET j=0: FOR y=1 TO 12: IF y=a OR y=b THEN NEXT y
1841 IF VAL I$(y)=j THEN BEEP .5,1: PRINT T$(y),I$(y): LET COPY=1: NEXT y
1842 IF VAL I$(y)<j THEN LET G=VAL I$(y)
1843 IF G>j THEN LET j=G: LET c=y
1845 NEXT y
1846 RETURN
1850 FOR y=1 TO 12: IF y=a OR y=b OR y=c THEN NEXT y
1851 IF VAL I$(y)=j THEN BEEP .5,1: PRINT T$(y),I$(y): LET COPY=1: NEXT y
1855 NEXT y
1856 RETURN
1860 LET S=0: LET p=0: FOR y=1 TO 12
1865 LET S=VAL J$(y): IF S>p THEN LET p=S: LET r=y
1867 NEXT y
1868 RETURN
1870 LET S=0: LET q=0: FOR y=1 TO 12: IF y=r THEN NEXT y
1871 IF VAL J$(y)=p THEN BEEP .5,1: PRINT T$(y),J$(y): LET COPY=1: NEXT y
1872 IF VAL J$(y)<p THEN LET S=VAL J$(y)
1874 IF S>q THEN LET q=S: LET t=y
1875 NEXT y
1876 RETURN
1880 LET S=0: LET v=0: FOR y=1 TO 12: IF y=r OR y=t THEN NEXT y
1881 IF VAL J$(y)=q THEN BEEP .5,1: PRINT T$(y),J$(y): LET COPY=1: NEXT y
1882 IF VAL J$(y)<q THEN LET S=VAL J$(y)
1884 IF S>v THEN LET v=S: LET n=y
1885 NEXT y
1886 RETURN
1890 FOR y=1 TO 12: IF y=r OR y=t OR y=n THEN NEXT y
1891 IF VAL J$(y)=v THEN BEEP .5,1: PRINT T$(y),J$(y): LET COPY=1: NEXT y
1895 NEXT y
1896 RETURN
1900 LET G=0: LET d=0: FOR y=1 TO 12: FOR x=1 TO 7: IF N$(y,x)="              " TH
EN NEXT y
1901 IF G$(y,x)="    " AND C$(y,x)="    " THEN NEXT x
1905 LET G=VAL G$(y,x): IF G>d THEN LET d=G: LET y1=y: LET x1=x
1906 NEXT x: NEXT y
1907 REM PRINT N$(y1,x1),d
1908 RETURN
1910 LET G=0: LET e=0: FOR y=1 TO 12: FOR x=1 TO 7: IF N$(y,x)="              " TH
EN NEXT y
1911 IF G$(y,x)="    " AND C$(y,x)="    " THEN NEXT x
1912 IF VAL G$(y,x)>d THEN NEXT x
1913 IF y=y1 AND x=x1 THEN NEXT x
1914 IF VAL G$(y,x)=d AND y<>y1 AND x<>x1 THEN BEEP .5,1: PRINT N$(y,x),G$(y,x):
 LET COPY=1: NEXT x: NEXT y
1915 IF VAL G$(y,x)<d THEN LET G=VAL G$(y,x): IF G>e THEN LET e=G: LET y2=y: LET
 x2=x
1916 NEXT x: NEXT y
1917 REM PRINT N$(y2,x2),e
1918 RETURN
1920 LET G=0: LET f=0: FOR y=1 TO 12: FOR x=1 TO 7: IF N$(y,x)="              " TH
EN NEXT y
1921 IF G$(y,x)="    " AND C$(y,x)="    " THEN NEXT x
1922 IF VAL G$(y,x)>e THEN NEXT x
1923 IF y=y2 AND x=x2 THEN NEXT x
1924 IF VAL G$(y,x)=e AND y<>y2 AND x<>x2 THEN BEEP .5,1: PRINT N$(y,x),G$(y,x):
 LET COPY=1: NEXT x: NEXT y
1925 IF VAL G$(y,x)<e THEN LET G=VAL G$(y,x): IF G>f THEN LET f=G: LET y3=y: LET
 x3=x
1926 NEXT x: NEXT y
1927 REM PRINT N$(y3,x3),f
1928 RETURN
1930 FOR y=1 TO 12: FOR x=1 TO 7: IF N$(y,x)="              " THEN NEXT y
1931 IF G$(y,x)="    " AND C$(y,x)="    " THEN NEXT x
1932 IF VAL G$(y,x)>f THEN NEXT x
1933 IF y=y3 AND x=x3 THEN NEXT x
1934 IF VAL G$(y,x)=f AND y<>y3 AND x<>x3 THEN BEEP .5,1: PRINT N$(y,x),G$(y,x):
 LET COPY=1: NEXT x: NEXT y
1938 RETURN
1950 LET S=0: LET k=0: FOR y=1 TO 12: FOR x=1 TO 7: IF N$(y,x)="              " TH
EN NEXT y
```

Please note that any lines that have a LET/p=0 command are for the Oliger disk interface. If you don't have an Oliger disk system, you will need to change all lines that deal with printer output since it is designed for the Oliger "B" board commands and an 80 column printer.

```
1951 IF F$(y,x)="    " AND C$(y,x)="    " THEN NEXT x
1955 LET S=VAL F$(y,x): IF S>k THEN LET k=S: LET y4=y: LET x4=x
1956 NEXT x: NEXT y
1957 REM PRINT N$(y4,x4),k
1958 RETURN
1960 LET S=0: LET m=0: FOR y=1 TO 12: FOR x=1 TO 7: IF N$(y,x)="                    " TH
EN NEXT y
1961 IF F$(y,x)="    " AND C$(y,x)="    " THEN NEXT x
1962 IF VAL F$(y,x)>k THEN NEXT x
1963 IF y=y4 AND x=x4 THEN NEXT x
1964 IF VAL F$(y,x)=k AND y<>y4 AND x<>x4 THEN BEEP .5,1: PRINT N$(y,x),F$(y,x):
 LET COPY=1: NEXT x: NEXT y
1965 IF VAL F$(y,x)<k THEN LET S=VAL F$(y,x): IF S>m THEN LET m=S: LET y5=y: LET
 x5=x
1966 NEXT x: NEXT y
1967 REM PRINT N$(y5,x5),m
1968 RETURN
1970 LET S=0: LET o=0: FOR y=1 TO 12: FOR x=1 TO 7: IF N$(y,x)="                    " TH
EN NEXT y
1971 IF F$(y,x)="    " AND C$(y,x)="    " THEN NEXT x
1972 IF VAL F$(y,x)>m THEN NEXT x
1973 IF y=y5 AND x=x5 THEN NEXT x
1974 IF VAL F$(y,x)=m AND y<>y5 AND x<>x5 THEN BEEP .5,1: PRINT N$(y,x),F$(y,x):
 LET COPY=1: NEXT x: NEXT y
1975 IF VAL F$(y,x)<m THEN LET S=VAL F$(y,x): IF S>o THEN LET o=S: LET y6=y: LET
 x6=x
1976 NEXT x: NEXT y
1977 REM PRINT N$(y6,x6),o
1978 RETURN
1980 FOR y=1 TO 12: FOR x=1 TO 7: IF N$(y,x)="                    " THEN NEXT y
1981 IF F$(y,x)="    " AND C$(y,x)="    " THEN NEXT x
1982 IF VAL F$(y,x)>o THEN NEXT x
1983 IF y=y6 AND x=x6 THEN NEXT x
1984 IF VAL F$(y,x)=o AND y<>y6 AND x<>x6 THEN BEEP .5,1: PRINT N$(y,x),F$(y,x):
 LET COPY=1: NEXT x: NEXT y
1988 RETURN
1999 GO TO 10
2100 GO TO VAL "100"
2200 GO TO VAL "200"
2300 GO TO VAL "600"

2400 CLS : PRINT TAB VAL "10";"LPRINT MENU"
2401 PRINT '"TAB VAL "7";"A. NEXT WEEKS SCHD"
2402 PRINT '"TAB VAL "7";"B. TEAM STANDINGS"
2403 PRINT '"TAB VAL "7";"C. DEVELOPE PROGRAM
          CHOOSE LETTER"
2405 IF INKEY$="a" OR INKEY$="A" THEN GO TO VAL "2415"
2406 IF INKEY$="b" OR INKEY$="B" THEN GO TO VAL "3000"
2407 IF INKEY$="c" OR INKEY$="C" THEN POKE VAL "23750",VAL "0": PRINT "YOU are n.
ow in BASIC RAM.       POKE 23750,128:GO TO 10 to go   back to cartridge.": LIST

2409 GO TO VAL "2405"
2410 STOP
2415 INPUT "Date? ";q$
2416 FOR v=17 TO 28 STEP 2: LET /p=0: POKE 23324,10: LPRINT : LPRINT : LPRINT
2417 GO SUB 900
2420 LPRINT : PRINT "Alley #";v;" ";: INPUT "TEAM # ? ";t: PRINT T$(t);" TM #";t
2421 LPRINT TAB 13;"Alley #";v;TAB 32;T$(t);TAB 57;" Team #";t: LPRINT : LPRINT
2423 FOR x=1 TO 7: IF N$(t,x)="                    " THEN LPRINT : LPRINT : GO TO 2430
2424 IF A$(t,x)="      " THEN LET A=VAL L$(t,x): GO TO 2428
2425 LET A=INT VAL A$(t,x)
2428 LPRINT TAB 24;"    ";N$(t,x);"   ";A;" AVG.": LPRINT
2429 NEXT x
2430 PRINT "Alley #";v+1;" ";: INPUT "Team # ? ";t: PRINT T$(t);" TM #";t
2431 LPRINT TAB 13;"Alley #";v+1;TAB 32;T$(t);TAB 57;" Team #";t: LPRINT : LPRIN
T
2433 FOR x=1 TO 7: IF N$(t,x)="                    " THEN LPRINT : LPRINT : GO TO 2440
2434 IF A$(t,x)="      " THEN LET A=VAL L$(t,x): GO TO 2438
2435 LET A=INT VAL A$(t,x)
2438 LPRINT TAB 24;"    ";N$(t,x);"   ";A;" AVG.": LPRINT
2439 NEXT x
2440 LPRINT : LPRINT : NEXT v
2445 LPRINT : LPRINT : LPRINT
2450 GO TO 10
2499 STOP
2500 REM INFORMATION WINDOW
2501 CLS : PRINT "Line 1000 initilazes program    and reserves memory."
2502 PRINT "Team Names:  DIM T$(12,15)       Ind. Names:  DIM N$(12,7,12)    Ind
Scores:  DIM S$(12,7,36,3,3)Ind. HiGa :  DIM G$(12,7,3)    Ind. HiSr :  DIM F$(
12,7,3)     Team HDC  :  DIM H$(12,36,3,3)  Team HGa  :  DIM I$(12,4)"
2503 PRINT "Team HSr  :  DIM J$(12,4)       Team TPins:  DIM K$(12,5)       ";VA
L y$-1;" AVG  :  DIM L$(12,7,3)     Ind. AVG  :  DIM A$(12,7,6)"
2504 PRINT "HiAv pos  :  DIM B$(12,7,2)     Num Games :  DIM C$(12,7,3)     Tota
l Pins:  DIM D$(12,7,5)     Team Pts. :  DIM P$(12,6)       W=NUM Weeks
          y$=year"
2505 PRINT "    Line 600 calculates averagesand stores ind. AVG, number of  game
s and total pins.                                        Line 600 should be R
UN right   after new weeks scores are      entered so that printing info.  is a
vailable."
2506 PRINT '"Line 100 Starts the season      Line 200 Enters weeiky scores   Lin
e 600 Calculates averages    Line 650 stores HiAVG positions".
2509 PRINT '"To get an on-screen listing of  numbers for order of high aves. GO
TO 700."
2510 PRINT '"To enter last years averages,   GO TO 800."
2515 PRINT '"Line 900 is a high ind. average SUB routine."
2520 PRINT '"Line 2415 LPRINTS weekly sched. to large printer. 2416 to skip  da
te. 2417 to correct error.                               Line 3000 LPRINTS
top          Line 3500 LPRINTS bottom of    standing sheet."
```

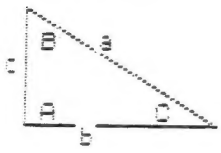
```
2522 PRINT "Line 1750 LPRINTS the High Threepart of standing sheet between 3000
and 3500. If there are dup- licates they will not be printedthough they will sho
w on screen and you will be asked to make a copy of screen on 2040 printer."
2525 PRINT '"Line 3400 contains OUR logo for standing sheet. Needs to be run onl
y once. In direct mode        GO $UB 3400 Also LET y$=year"
2545 PAUSE 0
2550 GO TO 10
2600 GO TO 9000
2950 LET /p=0: POKE 23324,10: FOR U=1 TO 6: GO TO 3000
3000 REM TEAM $TANDING$ ROUTINE
3002 LET /p=0: POKE 23324,10
3005 LPRINT : LPRINT : LPRINT TAB 43;"Team";TAB 58;"W";TAB 62;"L";TAB 65;"TPins";
TAB 71;"HGa";TAB 76;"H$r": GO SUB 3320
3006 LPRINT TAB 38;z;TAB 40;T$(t);TAB 57;U;TAB 61;|;TAB 65;K$(t);TAB 71;I$(t);TA
B 76;J$(t): GO SUB 3335
3008 FOR X=1 TO 6: LPRINT TAB 8;E$(x);TAB 38;z;TAB 40;T$(t);TAB 57;U;TAB 61;|;TA
B 65;K$(t);TAB 71;I$(t);TAB 76;J$(t): GO SUB 3335
3010 NEXT X
3012 LPRINT TAB 38;z;TAB 40;T$(t);TAB 57;U;TAB 61;|;TAB 65;K$(t);TAB 71;I$(t);TA
B 76;J$(t): GO SUB 3335
3015 LPRINT TAB 10;"BOWLING LEAGUE";TAB 38;z;TAB 40;T$(t);TAB 57;U;TAB 61;|;TAB
65;K$(t);TAB 71;I$(t);TAB 76;J$(t): GO SUB 3335
3018 LPRINT TAB 37;z;TAB 40;T$(t);TAB 57;U;TAB 61;|;TAB 65;K$(t);TAB 71;I$(t);TA
B 76;J$(t): GO SUB 3335
3019 LPRINT TAB 11;q$;TAB 37;z;TAB 40;T$(t);TAB 57;U;TAB 61;|;TAB 65;K$(t);TAB 7
1;I$(t);TAB 76;J$(t): GO SUB 3335
3020 LPRINT TAB 37;z;TAB 40;T$(t);TAB 57;U;TAB 61;|;TAB 65;K$(t);TAB 71;I$(t);TA
B 76;J$(t)
3022 LPRINT "-------------------------------------------------------------------
-------------"
3023 GO $UB 1750
3024 LPRINT "-------------------------------------------------------------------
-------------"
3025 GO TO 3500
3319 STOP
3320 LET H=200
3321 LET i=0: LET j=0: FOR z=1 TO 12
3322 LET u=0: FOR y=1 TO 12: LET w$=P$(y)
3323 IF VAL w$( TO 3)>h THEN GO TO 3330
3324 IF VAL w$( TO 3)=h THEN LET h=h+1: GO TO 3330
3325 IF y=i OR y=j THEN [illegible] y
3326 IF VAL w$( TO 3)>[illegible] THEN LET U=VAL w$( TO 3): LET I=VAL w$(4 TO ): L
ET t=y
3329 IF z=12 AND y=12 [illegible] LET w$=P$(y): LET U=VAL w$( TO 3): LET I=VAL
 w$(4 TO ): GO TO 3333
3330 NEXT y
3333 RETURN
3335 LET h=u: LET j=i: LET i=t: LET w$="       "
3340 NEXT z
3350 RETURN
3399 STOP
3400 DIM E$(6,19): LET E$(1)=" 000   U   U  RRRR ": LET E$(2)="0   0  U   U  R
 R": LET E$(3)="0   0  U   U  R   R": LET E$(4)="0   0  U   U  RRRR ": LET E$(5)
="0   0  U   U  R  R ": LET E$(6)=" 000    UUU   R   R"
3401 RETURN
[illegible] REM [illegible] POKE 23[illegible]
[illegible] PRINT TAB 9;"Bowler";TAB 16;"AVG";TAB 20;"GMS";TAB 24;"TPins";TAB 30;"HGa"
[illegible] TAB 40;"|";TAB 59;"Bowler";TAB 59;"AVG";TAB 63;"GMS";TAB 67;"TPins
[illegible] HGa";TAB 77;"H$r"
[illegible] FOR y=1 TO 12: GO SUB 3750
[illegible] IF z=45 THEN GO TO 3566
[illegible] LET z1=z: LET y1=y: LET x1=x: LET A1=INT VAL A$(y,x)
3520 LET z=z+42: GO SUB 3750
3521 IF y=13 THEN LET z=z-42: GO TO 3570
3525 LET z2=z: LET z=z-42: LET y2=y: LET x2=x: LET A2=INT VAL A$(y,x)
3530 IF z<10 THEN LPRINT TAB 1;z1;TAB 3;N$(y1,x1);TAB 16;A1;TAB 20;C$(y1,x1);TAB
 24;D$(y1,x1);TAB 30;G$(y1,x1);TAB 34;F$(y1,x1);TAB 40;"|";TAB 43;z2;TAB 46;N$(y
2,x2);TAB 59;A2;TAB 63;C$(y2,x2);TAB 67;D$(y2,x2);TAB 73;G$(y2,x2);TAB 77;F$(y2,
x2)
3540 IF z>=10 THEN LPRINT TAB 0;z1;TAB 3;N$(y1,x1);TAB 16;A1;TAB 20;C$(y1,x1);TA
B 24;D$(y1,x1);TAB 30;G$(y1,x1);TAB 34;F$(y1,x1);TAB 40;"|";TAB 43;z2;TAB 46;N$(
y2,x2);TAB 59;A2;TAB 63;C$(y2,x2);TAB 67;D$(y2,x2);TAB 73;G$(y2,x2);TAB 77;F$(y2
,x2)
3550 NEXT z
3555 STOP
3560 LET z=z+VAL "1": GO SUB VAL "3750"
3565 LET z1=z: LET y1=y: LET x1=x
3566 IF z=VAL "43" THEN LPRINT : LPRINT : LPRINT : LPRINT : LET z2=VAL "0": NEXT
 u: GO TO VAL "10"
3567 LET A1=INT VAL A$(y,x)
3570 LPRINT TAB VAL "0";z1;TAB VAL "3";N$(y1,x1);TAB VAL "16";A1;TAB VAL "20";C$
(y1,x1);TAB VAL "24";D$(y1,x1);TAB VAL "30";G$(y1,x1);TAB VAL "34";F$(y1,x1);TAB
 VAL "40";"|"
3575 GO TO VAL "3560"
3749 STOP
3750 REM IND. HI-AVG $UB
3760 FOR y=VAL "1" TO VAL "12": FOR x=VAL "1" TO VAL "7": IF N$(y,x)="
  " THEN NEXT y
3770 IF y=VAL "13" THEN LET z=z-VAL "42": GO TO VAL "3570"
3773 IF z=VAL "85" THEN GO TO VAL "3795"
3774 IF VAL B$(y,x)=z THEN RETURN
3775 NEXT x: NEXT y
3795 LET z=z-VAL "42": GO TO VAL "3570"
3999 STOP
9000 SAVE "BOWLING" LINE VAL "10"
9010 CLS : PRINT TAB VAL "5";"To VERIFY, rewind and:                PRESS ANY KEY"
9020 PAUSE 0: VERIFY "BOWLING"
9025 GO TO VAL "10"
```

This is a sample of of Tom Jennins's TRIG- 11 Program. SEE PAGE 6.

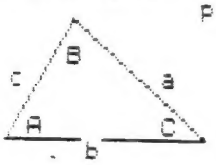
Enter LIST 1 to see the program and read the REM statements. WRITE THIS DOWN! Enter 999 as the first item of the six called for to BREAK into BASIC.
Press CONT and you're on your own.

Have fun. Tom Jennens

RIGHT TRIANGLE



OBLIQUE TRIANGLE



Wrong entry press "W"

ENTER KNOWN VALUES.(A,B,C,a,b & c, use 0 if unknown) FOR ANGLES AND SIDES.(Decimal values for both.)

A = B = C =

a = b = c =

This is a print out from Henry Kimmerle's BOWLING program. SEE PAGE 7.

BOWLING LEAGUE

Nov. 10,1999

	Team	W	L	TPins	HGs	HSr
1	ROBMAR	46	28	28796	1096	[illegible]
2	CONCORD MECHAN.	46	31	30796	974	[illegible]
3	OUDEMAN'S	45	32	28815	1043	[illegible]
4	ROSEHEADS	44	33	27793	1000	2735
5	HALLIGAN'S	40	37	28819	968	2781
6	VEDDA & SONS	39	38	30338	946	2846
7	CONCORD HEATING	38	39	29168	953	[illegible]
8	DAMSON & DAMSON	38½	41½	29479	924	[illegible]
9	EMI	34	43	27598	1063	2587
10	EATON AIRFLEX	29½	47½	28288	967	2768
11	SHEEPHEADS	22	34	28736	1002	2900
12	CONVIES	19	37	19841	913	2706

Hi Team Game		Hi Team Series		Hi-Ind. Game		Hi-Ind. Series	
ROBMAR	1096	OUDEMAN'S	2867	L. Haynik	278	L. Haynik	700
EMI	1063	ROBMAR	2865	N. Bentempo	268	A. Perko	676
OUDEMAN'S	1043	EMI	2857	T. Riegling	258	J. Constanzo	652

	Bowler	AVG	GMS	TPins	HGs	HSr
1	A. Perko	196	30	5890	246	676
2	L. Haynik	190	30	5704	278	700
3	J. Campana	191	12	2294	231	621
4	J. Constanzo	189	24	4535	256	652
5	L. Clark	188	30	5651	215	597
6	N. Bentempo	188	33	6211	268	614
7	K. Digby	184	30	5535	230	586
8	T. Kelly	180	24	4339	232	601
9	D. Halligan	180	30	5406	247	636
10	L. Hurstetler	180	30	5400	219	618
11	T. Riegling	181	24	4356	258	642
12	B. Wolfe	181	24	4359	232	626
13	K. Delameter	181	30	5435	215	604
14	N. Hickey	181	30	5433	246	660
15	T. Robertson	180	27	4860	232	648
16	B. Wright	180	30	5402	224	624
17	G. Zurowski	180	27	4870	246	625
18	R. Zelina	179	30	5367	206	611
19	J. Hoodhouse	179	18	3214	214	600
20	R. Kubera	179	21	3744	236	635
21	D. Oudeman	177	27	4806	258	679
22	M. Denova	177	21	3723	230	665
23	G. Davenport	176	30	5287	223	640
24	M. Slovak	176	30	5281	236	666
25	P. Vedda	176	30	5280	257	687
26	T. Danielson	176	30	5268	226	614
27	J. Meyers	173	27	4669	237	661
28	J. Leach	[illegible]		3798	222	648
29	B. Lester	[illegible]		[illegible]	218	578
30	E. Hafner	[illegible]		[illegible]	246	627
31	P.Zelezinski	[illegible]		[illegible]	212	661
32	C. Schmitt	[illegible]		[illegible]	226	666
33	A. Bo[illegible]	[illegible]		[illegible]	231	672
34	N. Ha[illegible]	[illegible]		[illegible]	235	666
35	D. Hi[illegible]	[illegible]		[illegible]	238	668
36	J. Ve[illegible]	[illegible]		[illegible]	211	668
37	M. Mu[illegible]	[illegible]		[illegible]	212	679
38	R. Hi[illegible]	[illegible]		[illegible]	223	666
39	F. Belcher	166	18	2989	204	647
40	D. Lazor	164	24	4001	205	651
41	G. Resrick	163	30	5488	203	648
42	D. Fraser	162	21	3414	210	644

	Bowler	AVG	GMS	TPins	HGs	HSr
43	P. Barelse	162	30	4861	203	579
44	B. Kmiec	161	33	5335	209	568
45	G. Carlson	161	21	3368	202	535
46	G. Berelek	161	27	4348	226	564
47	B. Conklin	160	12	1927	213	515
48	G. Smith	159	30	4775	208	528
49	D. Bradich	160	9	1430	193	514
50	T. Brabenec	158	21	3334	216	610
51	E. Moore	156	21	3288	186	521
52	A. Johnson	156	33	5137	205	546
53	J. Schurr	156	30	4681	195	487
54	D.Brzezinski	154	15	2317	179	586
55	B. Sharfer	154	27	4162	199	516
56	M. Gilman	153	21	3224	193	514
57	B. Lyeson	152	30	4556	222	518
58	J. Miller	152	9	1369	207	580
59	M. Mack	151	9	1367	199	474
60	K. Alaimo	150	21	3150	173	474
61	R. Miller	148	15	2234	202	497
62	D.Grabkemper	148	15	2221	179	587
63	T. Damson	146	24	3510	193	541
64	G. Riegling	146	15	2186	209	536
65	J. Fiory	146	33	4798	209	506
66	M. Kimmerle	144	30	4334	186	495
67	M. Tutin	136	12	1624	179	446
68	M. Smith	131	27	3560	195	462
69	G. Blazey	106	30	3561	140	360
70	D. Shop	192	3	572	208	572
71	N. Hoelen	174	6	1012	182	514
72	Mussulin	170	6	1022	191	523
73	D. Jones	167	3	499	148	404
74	B. Mahon	167	3	441	185	441
75	B. Hensel	162	3	821	297	521
76	J. Mitchell	157	3	468	167	460
77	E. Hurrell	146	3	473	171	496
78	T. Amato	127	6	768	141	298

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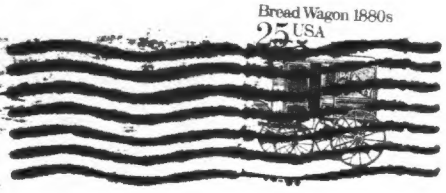

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